Claim 1 recites a driving method for an optical printer that comprising "controlling time lengths of lighting the individual light emitting elements ... and simultaneously changing luminance of the respective light emitting elements according a predetermined characteristic curve as the lighting time for each pixel elapses." The Examiner contends that Pham discloses this feature. Specifically, the Examiner contends that the exposure time shown in Figs. 4-9 corresponds to the claimed lighting time.

In addition, as best understood by Applicants, the Examiner is contending that the claimed simultaneously changing luminance is disclosed by Pham because the brightest LEDs (B) are enabled at the same time period to record gray level 1 dot as the weakest LEDs (W) to record gray level 15 dot. Office Action at page 2. The Examiner also contends that Pham discloses changing the brightness level of the LEDs by use of element 78 in Fig. 2.

Pham discloses a linear array 10 of LEDs (e.g, 3584 LEDs) disposed "to expose selectively a photosensitive image-receiver medium 12" to form an image (col. 2, line 66 to col. 3, line 15). Pham also discloses that, for an average LED, the recorded reflection density versus exposure time is graphically illustrated in Fig. 4 (Fig. 4, col. 4, line 67 to col. 5, line 4). The recorded density may be converted to a corresponding gray level as graphically illustrated in Fig. 5 (col. 5, lines 8-35). Thus, the relationship between a particular gray level that is recorded on a medium and the exposure time needed to produce the particular gray level by an average LED is graphically illustrated in Fig. 5.

Pham also discloses that the light output of each LED is preferably balanced by initially balancing the LEDs by using resistors 78a, 78b (col. 5, lines 15-20, col. 4, lines 43-45). However, because of the inherent differences in LEDs, the light output of some LEDs will still produce more light than others for the same signal (col. 5, lines 47-52). Accordingly, the brightest LEDs will require less exposure time to produce a given gray level than the weakest LEDs (see col. 5, lines 56-66). Fig. 6 represents the variation in exposure times needed for any given gray level for all the LEDs in the linear array (col. 5, lines 54-56). Because circuitry to individually vary the exposure time for the 3584 LEDs would be impractical, the LEDs are grouped into a limited number of exposure times (e.g. seven) that still satisfy human perception (see col. 6, lines 20-51, Fig. 7 and 8, Abstract).

Therefore, to the extent Pham may disclose changing the brightness of any given LED, it is only in the context of initially balancing the LED by using resistors 78a, 78b (col. 4, lines 43-45). There is no disclosure or suggesting that resistors 78a, 78b are used in any manner during the exposure time, which the Examiner contends corresponds to the claimed lighting time. Accordingly, Applicants submit that any adjustment of resistors 78a, 78b cannot correspond to "changing luminance of the respective light emitting elements ... as the lighting time for each pixel elapses" as set forth in claim 1.

Figs. 6, 7 and 9 illustrate the range of exposure time based on a difference in the characteristic of each LED. Figs. 6, 7 and 9 do not show a change in the luminance for each LED. Since Figs. 6, 7 and 9 illustrate graphs which show the required exposure time for a given LED in order to produce a given gray level, the brightness of the respective LEDs must be

constant, or else the graphs are meaningless. For example, in Fig. 7, the weakest LED (W) in the 3584 LEDs must be ON for approximately 8.5 microseconds in order to produce a gray level 1 dot, which corresponds to a pixel (see col. 1, lines 58-59 and col. 3, lines 38-40), whereas the brightest LED (B) must be ON for only approximately 6 microseconds to produce the same gray level 1 dot. If the brightness of the respective LED is changed during the exposure time as contended by the Examiner, the actual exposure time required to produce a given gray level could not be calculated using Fig. 7.

Since Fig. 7 graphically represents an embodiment of the invention in Pham, Applicants submit that Pham requires that the respective LED brightness be constant during the exposure time. Therefore, Pham does not disclose or even remotely suggest varying the brightness during the exposure time as contended by the Examiner. Accordingly, Pham does not disclose or suggest "changing luminance of the respective light emitting elements ... as the lighting time for each pixel elapses" as set forth in claim 1.

With respect to the Examiner's contention that Pham discloses simultaneously enabling the very brightest LEDs at the same time as enabling the very weakest LEDs, Applicant submits that, even if accurate, the mere fact that many LEDs may be concurrently enabled at various times is irrelevant since the luminance of the respective light emitting element is not changed as the lighting time for each pixel (dot) elapses. Accordingly, the Examiner's interpretation, even if accurate, does not disclose the claimed simultaneously changing luminance as set forth in claim 1.

Because claims 3, 4, 6 and 10 depend on claim 1, Applicants submit that these claims are patentable at least by virtue of their dependency.

In addition these claims more particularly define the variation in the luminance of the light emitting element. The Examiner generally cites sections and figures related to the exposure time (duration), which is controlled by clock pulses.

Applicants submit that any disclosure related to changing clock pulses and/or changing exposure time is irrelevant since the change in exposure time does not change the luminance of the light emitting element for reasons similar to those set forth in claim 1.

II. Claim Rejections - 35 U.S.C. § 103

The Examiner has rejected claims 2 and 5 under 35 U.S.C. 103(a) as being unpatentable over Pham in view of Masubuchi *et al.* (US 6,262,757) ["Masubuchi"]. For at least the following reasons, Applicants traverse the rejection.

Because claims 2 and 5 depend on claim 1 and Masubuchi does not cure the deficient teachings of Pham with respect to claim 1, Applicants submit that these claims are patentable at least by virtue of their dependency.

The Examiner has rejected claims 7-8 and 11 under 35 U.S.C. 103(a) as being unpatentable over Pham in view of Nakatani (US 6,373,514) ["Nakatani]. For at least the following reasons, Applicants traverse the rejection.

Because claim 7 recites features similar to those given above with respect to claim 1 and Nakatani does not cure the deficient teachings of Pham with respect to claim 1, Applicants

submit that claim 7 is patentable for at least reasons similar to those given above with respect to claim 1.

Applicants submit that claims 8 and 11 are patentable at least by virtue of their dependency on claim 7.

The Examiner has rejected claim 9 under 35 U.S.C. 103(a) as being unpatentable over Pham in view of Nakatani and Masubuchi. For at least the following reasons, Applicants traverse the rejection.

Because Masubuchi does not cure the deficient teachings of Pham and Nakatani with respect to claim 7, Applicants submit that claim 9 is patentable at least by virtue of its dependency.

III. Allowable Subject Matter

Applicants thank the Examiner for finding allowable subject matter in claims 12-15 and for indicating that claims 12-15 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

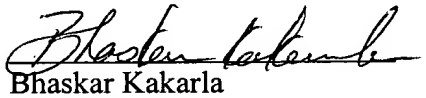
Applicants hold rewriting these claims in abeyance until the subject matter regarding their respective base claims is resolved.

IV. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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